

PATENT COOPERATION TREATY

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INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/JP2004/004183

International filing date (day/month/year)
25.03.2004

Priority date (day/month/year)
25.03.2003

International Patent Classification (IPC) or both national classification and IPC
H04H1/00

Applicant
MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☒ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2004/004183

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
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Box No. IV Lack of unity of invention

1. ☒ In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
 - ☐ paid additional fees under protest.
 - ☒ not paid additional fees.
2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
 - ☒ not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
 - ☒ the parts relating to claims Nos. 1-4, 7, 12-16

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-4, 7, 12-16
	No: Claims	
Inventive step (IS)	Yes: Claims	3,4
	No: Claims	1-2, 7, 12-16
Industrial applicability (IA)	Yes: Claims	1-4, 7, 12-16
	No: Claims	

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/JP2004/004183

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item IV.

This Authority considers that there are 6 inventions covered by the claims indicated as follows:

I: Claims 1-4, 7, 12-16

The first invention, which is constituted by the subject-matter of claim 3, defines a wireless terminal receiving two signals related to a first and a second service, wherein a tuner unit generates a first baseband signal demodulated by a first baseband unit and a second baseband signal demodulated by a second baseband unit one at a time according to a switching signal, and wherein the second service is a bidirectional communication service and the wireless terminal further comprises a transmitting unit.

Note that independent claims 1 and 15 and dependent claims 2, 7, 12-14 and 16 do not constitute an invention (because their subject-matter lacks an inventive step with regard to the disclosure of Document US 6483456 as set out below in Item V Sections 3-10), but have formally been associated with the first invention, since they have been searched together with the first invention.

II: Claims 5, 6 and 17

Claim 5 is directed to a wireless terminal receiving two signals related to a first and a second service, wherein a tuner unit generates a first baseband signal demodulated by a first baseband unit and a second baseband signal demodulated by a second baseband unit one at a time according to a switching signal, and wherein the tuner unit comprises two tuners operable to generate the first and second baseband signals, respectively, in accordance with said switching signal.

III: Claim 8

Claim 8 is directed to a wireless terminal receiving two signals related to a first

and a second service, wherein a tuner unit generates a first baseband signal demodulated by a first baseband unit and a second baseband signal demodulated by a second baseband unit one at a time according to a switching signal, and wherein the wireless terminal further comprises a first and a second antenna adapted to the first and second signals and wherein the tuner unit comprises a switching unit to select one of the antennae.

IV: Claim 9

Claim 9 is directed to a wireless terminal receiving two signals related to a first and a second service, wherein a tuner unit generates a first baseband signal demodulated by a first baseband unit and a second baseband signal demodulated by a second baseband unit one at a time according to a switching signal, and wherein the tuner unit includes a variable bandpass filter.

V: Claim 10

Claim 10 is directed to a wireless terminal receiving two signals related to a first and a second service, wherein a tuner unit generates a first baseband signal demodulated by a first baseband unit and a second baseband signal demodulated by a second baseband unit one at a time according to a switching signal, and wherein the first service is provided by a cellular system providing a plurality of base stations and the second service is a positioning service and wherein a base station is selected in dependence on a position determined from the signal related to the second service.

VI: Claim 11

Claim 11 is directed to a wireless terminal receiving two signals related to a first and a second service, wherein a tuner unit generates a first baseband signal demodulated by a first baseband unit and a second baseband signal demodulated by a second baseband unit one at a time according to a switching signal, and wherein the terminal determines its moving speed from the second signal and selects an operating mode for processing of the first signal in

dependence on the moving speed.

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

The claims constituting the above identified inventions are only linked by the features of claim 1. However, as set out below (in Item V Section 3) the subject-matter of claim 1 lacks an inventive step with regard to Document US 6483456, which has been identified as representing the closest prior art. Consequently, the features of claim 1 do not constitute an inventive concept.

The application, hence, does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

For the sake of completeness, an analysis of the special technical features of the different inventions and their associated objective technical problems is also provided:

The special technical features of the different inventions with regard to the prior art disclosed in Document US 6483456 can be identified as follows.

Claims 3-4: The special technical feature with regard to the aforementioned prior art is that the second service is a bidirectional communication service and that the wireless terminal further comprises a transmitting unit. The associated technical problem to be solved may be considered as providing interactive broadcast services.

Claims 5, 6 and 17: The special technical feature with regard to the aforementioned prior art is that the tuner unit of the wireless terminal comprises two tuners operable to generate the first and second baseband signals, respectively, in accordance with said switching signal. The associated technical problem to be solved may be regarded as to simplify the implementation of the tuner unit.

Claim 8: The special technical feature with regard to the aforementioned prior art is that the wireless terminal further comprises a first and a second antenna adapted to the first

and second signals and that the tuner unit comprises a switching unit to select one of the antennae. The associated technical problem to be solved may be regarded as to improve the reception of the two signals.

Claim 9: The special technical feature with regard to the aforementioned prior art is that the tuner unit includes a variable bandpass filter. The associated technical problem may be regarded as to increase the flexibility of the receiver.

Claim 10: The special technical feature with regard to the aforementioned prior art is that the first service is provided by a cellular system providing a plurality of base stations and the second service is a positioning service and that a base station is selected in dependence on a position determined from the signal related to the second service. The associated technical problem may be regarded as to allow for continuous reception of the first service.

Claim 11: The special technical feature with regard to the aforementioned prior art is that the terminal determines its moving speed from the second signal and selects an operating mode for processing of the first signal in dependence on the moving speed. The associated technical problem to be solved may be regarded as to reduce the effect of fading.

Consequently, neither the objective problem underlying the subjects of the claimed inventions, nor their solutions defined by the special technical features allow for a relationship to be established between the said inventions, which involves a single general inventive concept.

In conclusion, the groups of claims are not linked by common or corresponding special technical features and define 6 different inventions not linked by a single general inventive concept.

The application, hence, does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

Re Item V.

1. Reference is made to the following documents:

- D1: US 6483456 B (HUISKEN JOSEPHUS ANTONIUS) 19 November 2002 (2002-11-19)
D2: WO 01/08441 A (KONINKLIJKE PHILIPS ELECTRONICS N.V) 1 February 2001 (2001-02-01)
D3: US 2002/010763 A1 (SALO JUHA ET AL) 24 January 2002 (2002-01-24)

2. Document D1 discloses a wireless terminal device (cf. D1, column 1, lines 6-10) for (i) receiving a first radio signal relating to a first service which is a broadcasting service (cf. D1, column 1, lines 9-10), and a second radio signal relating to a second service (cf. D1, column 1, lines 8-9), the first radio signal representing a plurality of time-division multiplexed programs as well as periods during which the respective programs are represented (cf. D1, column 1, lines 9-10; note that the signal represents a Digital Audio Broadcast DAB signal, which is known to carry a plurality of time-division multiplexed signals, viz. the different sub-channels), and (ii) performing predetermined processing based on the second radio signal (cf. D1, column 1, lines 29-30, and column 3, line 12), the wireless terminal device comprising : a tuner unit operable to generate a first baseband signal and a second baseband signal one at a time according to a switching signal (cf. D1, column 3, lines 26-53, and Fig. 1), the first baseband signal being generated by frequency converting the received first radio signal and the second baseband signal being generated by frequency converting the received second radio signal (cf. D1, column 3, lines 26-53, and Fig. 1); a first baseband unit operable to demodulate the first baseband signal to a first data signal (cf. D1, Fig. 1); a second baseband unit operable to demodulate the second baseband signal to a second data signal (cf. D1, Fig. 1); and a switching unit operable to identify, with reference to the first data signal, a period during which the first radio signal representing the selected program is received (cf. D1, column 3, lines 26-34, and Figs. 1 and 4), and control the tuner unit by outputting thereto the switching signal indicating a first period that includes the identified period, so that the tuner unit generates the first baseband signal during the first period and the second baseband signal during a second period that is a period other than the first period, and conducts the predetermined processing using the second data signal (cf. D1,

column 3, lines 9-11 and lines 26-53, and Fig. 1).

3. Claim 1

- 3.1 Consequently, the subject-matter of claim 1 differs from the disclosure of Document D1 only in that according to claim 1 the wireless terminal performs reproduction of a user selected one of the programs conveyed by the first radio signal, whereas Document D1 does not disclose the further processing of the DAB signal after demodulation.
- 3.2 However, it is considered as being obvious that the receiver of D1 performs also reproduction (in terms of rendering) of one of the programs carried by the demodulated DAB signals and that said program is selected by a user (e.g. by selecting a radio program).

Consequently, the subject-matter of claim 1 lacks an inventive step (Article 33(3) PCT) with regard to the disclosure of Document D1.

4. Claim 2

The following features introduced in claim 2 are known from Document D1:

- the tuner unit includes a local oscillator operable to generate a local signal at (i) a first frequency during the first period for use in the generation of the first baseband signal and (ii) a second frequency during the second period for use in the generation of the second baseband signal, according to the switching signal (cf. D1, column 3, lines 26-29, 35-40, and 44-48, and Fig. 1) and
- the tuner unit generates, using the local signal, the first and second baseband signals by frequency converting the first and second radio signals, respectively (cf. D1, column 3, lines 26-53, and Fig. 1).

Hence, said features do not add anything of inventive significance to the subject-matter of claim 1. Consequently, the subject-matter of claim 2 lacks an inventive step (Article 33(3) PCT).

5. Claim 7

Claim 7 specifies that the wireless terminal further comprises a power-saving unit operable to restrict or stop the supply of operating power or an operating clock signal to (i) the second baseband unit during the first period, and (ii) the first baseband unit during the second period, according to the switching signal.

It is well known in the technical field that power savings can be achieved by turning off units during periods they are not required. In Document D1, the first baseband unit (which is the DAB demodulator) does not receive any input when the receiver operates in the GPS reception mode (cf. D1, column 3 and Fig. 1). Similarly, the second baseband unit (which is the GPS signal processor) does not receive any input when the receiver operates in the DAB reception mode (cf. D1, column 3 and Fig. 1). That is, the first baseband unit and the second baseband unit are not required, when the receiver operates in the GPS reception mode and DAB reception mode, respectively. Therefore, it would be obvious to the person skilled in the art to turn off the first and second baseband units by restricting the power supply when not required in order to reduce the power consumption of the terminal/receiver.

Consequently, the subject-matter of claim 7 lacks an inventive step (Article 33(3) PCT).

6. Claim 12

Claim 12 further specifies that the information related to the predetermined processing of the second signal is displayed on a display along with the selected program.

The application of the integrated DAB/GPS receiver as disclosed in Document D1 to an integrated car audio and navigation system is considered to be obvious to the person skilled in the art. Furthermore, it would be in the nature of such a system to display the position of the vehicle on a map together with driving instructions while rendering a program conveyed by the received DAB signal.

Therefore, the feature introduced in claim 12 is considered not to add anything of inventive significance to the subject-matter of claim 1. Consequently, the subject-matter of claim 1 lacks an inventive step.

7. Claim 13

It is known from Document D1 that the first service is a Digital Audio Broadcasting service (cf. D1, column 1, lines 8-9).

Hence, the feature introduced in claim 13 does not add anything of inventive significance to the subject-matter of claim 1. Consequently, the subject-matter of claim 13 lacks an inventive step (Article 33(3) PCT).

8. Claim 14

It is known from Document D1 that the second service is a Global Positioning Service (cf. D1, column 1, line 6).

Hence, the feature introduced in claim 14 does not add anything of inventive significance to the subject-matter of claim 1. Consequently, the subject-matter of claim 14 lacks an inventive step (Article 33(3) PCT).

9. Claim 15

Claim 15 specifies a single-chip IC or an IC-chip set for use in a wireless terminal comprising in addition to the features of claim 1 a reception signal obtaining terminal and a program selection signal obtaining terminal operable to obtain a signal indicating the selected program. Note that the wireless terminal as defined in claim 1 lacks an inventive step with regard to the disclosure of Document D1 (cf. Item V/Section 3 of this communication).

The implementation of the receiver of Document D1 as an IC (either as a single-chip or as a chip set) is considered obvious to the person skilled in the art. Furthermore, the receiver of Document D1 comprises a "a reception signal obtaining terminal" (cf.

D1, column 3, lines 3-5, and Fig. 1 (the receiver front-end)). The "program selection signal obtaining terminal" is considered as being an integral part of any DAB receiver, since any DAB receiver provides means to select a program for rendering (e.g. a user interface) and, thus, requires a means to receive a signal indicating the selected program.

Therefore, the subject-matter of claim 15 does not involve an inventive step (Article 33(3) PCT).

10. Claim 16

The following features introduced in claim 16 are known from Document D1:

- the tuner unit includes a local oscillator operable to generate a local signal at (i) a first frequency during the first period for use in the generation of the first baseband signal and (ii) a second frequency during the second period for use in the generation of the second baseband signal, according to the switching signal (cf. D1, column 3, lines 26-29, 35-40, and 44-48, and Fig. 1) and
- the tuner unit generates, using the local signal, the first and second baseband signals by frequency converting the first and second radio signals, respectively (cf. D1, column 3, lines 26-53, and Fig. 1).

Hence, said features do not add anything of inventive significance to the subject-matter of claim 15. Consequently, the subject-matter of claim 16 lacks an inventive step (Article 33(3) PCT).

11. Claim 3

11.1 Claim 3 specifies that the wireless terminal as defined in claim 1 further comprises a transmitting unit and that the second service is a bi-directional communication service.

11.2 These features are not known from Document D1. In Document D1, the second service is a GPS service, which is unidirectional and not a communication service.

Further, the terminal of Document D1 does not comprise a transmitting unit or a transceiver.

11.3 With regard to the disclosure of Document D1, the objective technical problem to be solved by the wireless terminal according to claim 3 may be regarded as to provide or support interactive services or supplementary services.

11.4 In the light of Documents D2 and D3, it would be obvious to the person skilled in the art to integrate a cellular transceiver (e.g. a GSM transceiver) in the receiver of Document D1 when setting off to solve the aforementioned technical problem.

However, when doing so he would not restrict the operational availability of the cellular transceiver in dependence on the broadcast service as set out in claim 3 in combination with claim 1, since there are no prompts in the available prior art to do so. It cannot be concluded from the teaching of Document D1, that in a multi-mode terminal the operational availability of any receiving or transceiving unit is determined by the structure or contents of the signal of a broadcast service. In Document D1, the second service is a positioning service, which is generally a low priority service and whose signals can be processed in subsequent bursts of short duration given the structure of a GPS signal. In contrast to that, a bi-directional communication service is usually of high-priority and the frames or radio bursts are longer than the GPS code. Also, the transceiver can not operate at an arbitrary point of time as any wireless communication system has a fixed structure with respect to transmit/receive frames or slots. When applying the teaching of Document D1 to a wireless terminal supporting broadcast and bi-directional communication services, the person skilled in the art would rather limit the operational availability of the units processing the broadcasting service in dependence on the activity of the bidirectional communication service.

11.5 Therefore, the wireless terminal as defined in claim 3 is considered not to be obvious with regard to the available prior art.

Consequently, the subject-matter is considered as involving an inventive step (Article

33(3) PCT).

12. Claim 4

Claim 4 is dependent on claim 3 and as such meets the requirements of the PCT with respect to novelty and inventive step (Article 33(2) and 33(3) PCT).

Re Item VII.

1. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in Document D1 is not mentioned in the description, nor is this document identified therein.
2. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
3. Claim 15 comprises all the features of claim 1 and is therefore not appropriately formulated as a claim dependent on the latter (Rule 6.4 PCT).

Re Item VIII.

The application does not meet the requirements of Article 6 PCT, because claim 12 is not clear.

1. Claim 12 contains an explicit reference to "the second radio program". However, neither claim 1 (on which claim 12 depends) nor claim 12 define a "second radio program". Therefore, said explicit reference renders the definition of the subject-matter of claim 12 unclear.